UNITED STATES DEPARTMENT OF AGRICULTURE AGRICULTURAL RESEARCH STATION (PWS 5420061)
SOURCE WATER ASSESSMENT FINAL REPORT

July 17, 2001

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for United States Department of Agriculture, Agricultural Research Station (USDA ARS), Kimberly, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The USDA ARS (PWS 5420061) drinking water system consists of one ground water well. A check of the Idaho Drinking Water Information Management System (DWIMS) revealed past drinking water quality information for the USDA ARS drinking water system. No volatile organic compounds (VOCs), synthetic organic compounds (SOCs), or microbial detections were recorded for the USDA ARS well water.

A single detection of the inorganic compound (IOC) arsenic in the USDA ARS well at a concentration of 0.013 milligrams per liter (mg/l) was recorded in May 1995. This detection is well below the current Maximum Contaminant Level (MCL) of 0.05 mg/l for arsenic. The Safe Drinking Water Act requires the United States Environmental Protection Agency (EPA) to revise the current MCL for arsenic. In January 2001, EPA published a new standard for arsenic in drinking water that requires public water supplies to reduce arsenic to 0.01 mg/l by 2006. EPA is reviewing this standard so that communities that need to reduce arsenic in drinking water can proceed with confidence that the new standard is based on sound science and accurate cost estimates.

From September 1993 to June 2000, nitrate levels in the USDA ARS well water ranged from 4.96 mg/l to 6.05 mg/l for five samples. The highest concentration of nitrates detected in the USDA ARS well in December 1998 was just under 61% of the MCL for nitrate of 10 mg/l. A Sanitary Survey conducted in 1999 found that the USDA ARS drinking water system was in substantial compliance with current PWS regulations. The Sanitary Survey recommended that the USDA ARS develop and implement a cross connection and a backflow prevention program for the USDA ARS drinking water system.

In terms of total susceptibility, the USDA ARS well water rated moderate for susceptibility to IOCs, VOCs, SOCs, and microbial contaminants. High countywide farm chemical use, the presence of a nitrate priority area and an organics priority area for pesticides, the high percentage of agricultural land in the vicinity, aquifer properties, and the presence of multiple potential sources of contamination in the delineated source water assessment area contributed to the overall ratings for the USDA ARS well.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the USDA ARS drinking water system, source water protection activities should first focus on implementing the recommendations outlined in the 1999 Sanitary Survey, if they have not yet been addressed. Since nitrate detections recorded in the USDA ARS well water reached 60% of the MCL, USDA ARS should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat nitrates. Practices aimed at reducing or preventing the leaching of farm chemicals into the soil should be investigated and implemented. Any spills from the identified potential contaminant sources in the source water assessment area should be monitored carefully. Most of the source water protection designated area is outside the direct jurisdiction of USDA ARS. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can

provide additional protection for areas outside of the direct jurisdiction of USDA ARS. Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR USDA ARS, KIMBERLY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The USDA ARS drinking water system is a non-community, non-transient system composed of one groundwater well, serving approximately 56 people through two connections. The system is located in Twin Falls County, to the northeast of Kimberly, Idaho and to the south of the Snake River (Figure 1).

Nitrates represent the only water chemistry issue for the USDA ARS drinking water. From September 1993 to June 2000, nitrate levels in the USDA ARS well water ranged from 4.96 mg/l to 6.05 mg/l for five samples. The highest concentration of nitrates detected in the USDA ARS well in December 1998 was just under 61% of the MCL for nitrate of 10 mg/l.

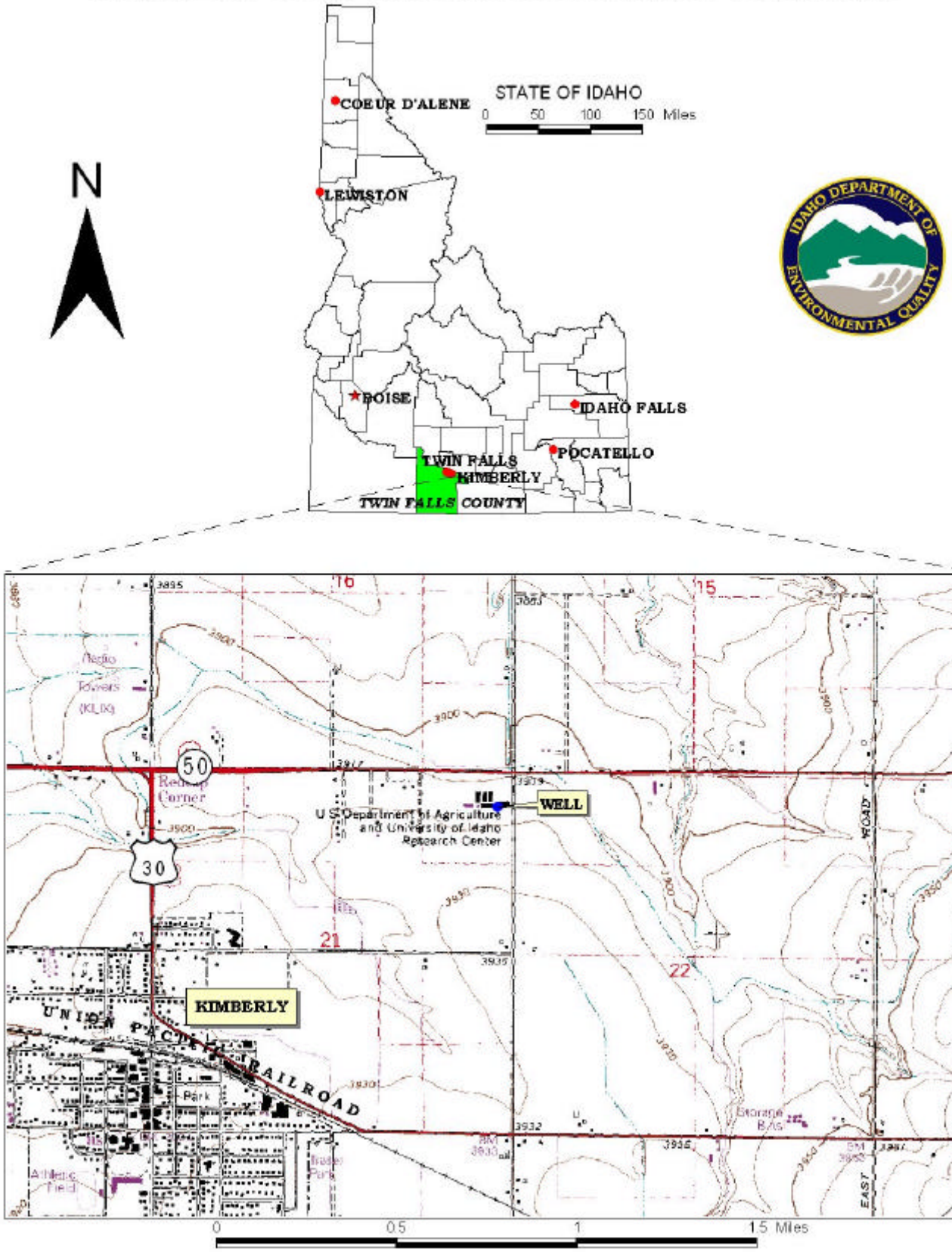
Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Snake River Plain Aquifer in the vicinity of USDA ARS. The computer model used site specific data, assimilated by DEQ from a variety of sources including USDA ARS well logs, other local area well logs, and hydrogeologic reports summarized below.

The USDA ARS well extracts water from the Banbury Basalt which overlies the Idavada Volcanics. The Idavada Volcanics unit consists of welded ash and tuff, rhyolite, and some basalt flows. The Idavada Volcanics are up to 2,000 feet thick in the Kimberly area and contain fractures and columnar joints, allowing some mixing of the geothermal groundwater in the Idavada Volcanics with groundwater in the Banbury Basalt (Lewis and Young, 1989). The Banbury Basalt is of variable thickness and is the primary non-geothermal aquifer in the Kimberly area (Moffat and Jones, 1984). Basalt flows fracture at the surface as they cool. The fractures occur in the horizontal direction throughout the flow. The Banbury Basalt is fractured and contains thin sedimentary interbeds. These fractures and sedimentary interbeds comprise the water producing zones in the Banbury Basalt (Cosgrove, et al., 1997). Regional ground water flow is to the north, but may vary with proximity to major creeks and the Snake River (Lewis and Young, 1989).

The delineated source water assessment area for the USDA ARS well can best be described as a corridor approximately 0.7 miles wide and 4.5 miles long extending to the south and slightly west from USDA ARS (Figure 2). The actual data used by DEQ in determining the source water assessment delineation area is available upon request.

FIGURE 1. Geographic Location of the USDA ARS



Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside USDA ARS wellhead area is irrigated agriculture with urban land use to the southwest. Land use within the immediate area of the wellhead is predominantly irrigated agriculture.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted during March 2001. This process involved identifying and documenting potential contaminant sources within USDA ARS Source Water Assessment area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. In April 2001, Shane Swafford, the USDA ARS system operator conducted an enhanced inventory of potential contaminant sources in the source water assessment area. The delineated source water area for the USDA ARS well contains six potential contaminant sources, five of them in the 3-year time of travel (Table 1). Figure 2 shows the locations of these various potential contaminant sites relative to the wellhead.

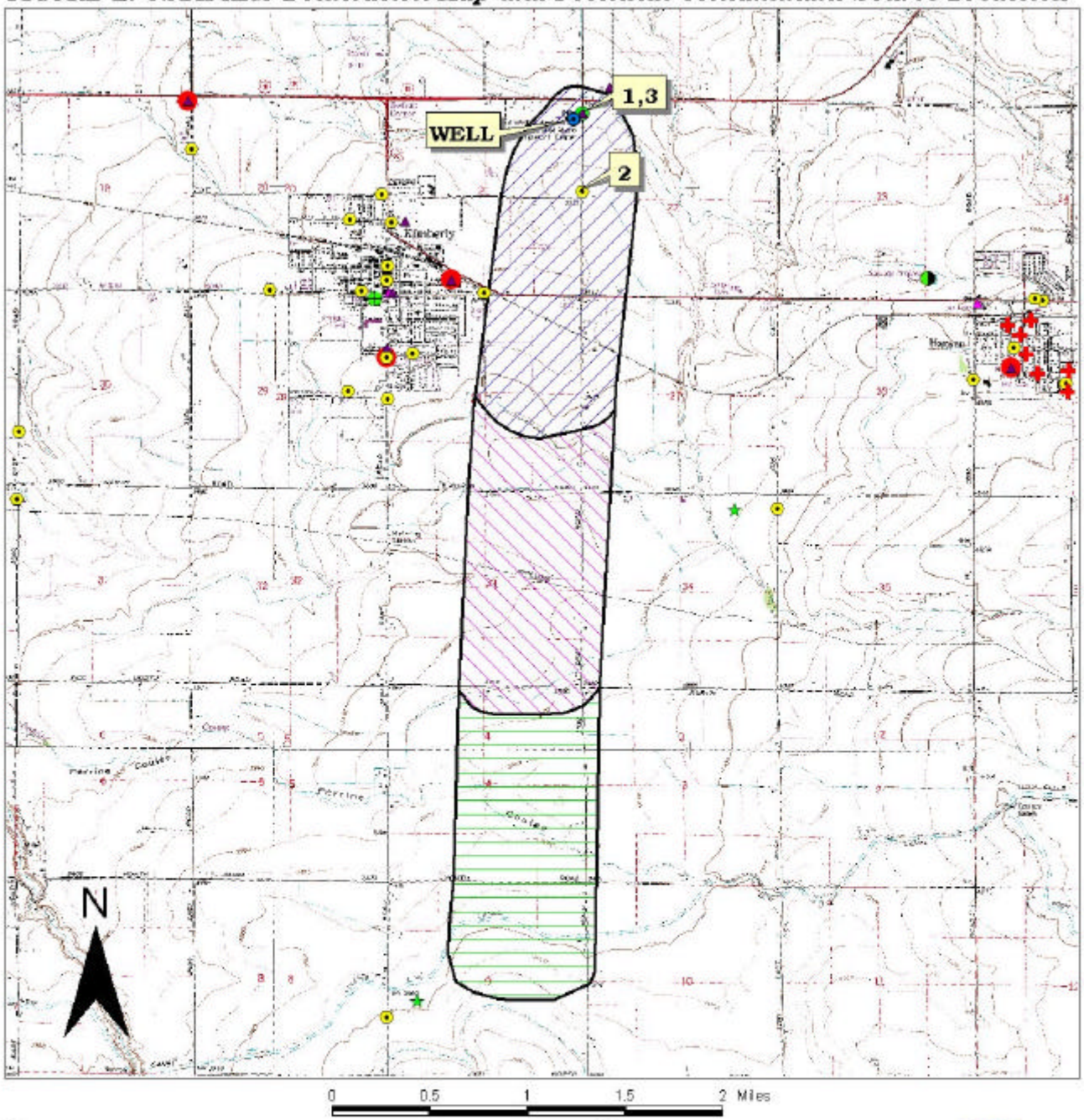
Highway 30 and the Union Pacific Railroad represent potential sources of contamination because they are transportation corridors. Accidental releases of contaminants on these corridors, within the source water assessment area, could spill IOCs, VOCs, SOCs, or microbial contaminants on to the well-drained soil. These potential contaminants could migrate down through the fractured basalt in the vadose zone and possibly contaminate the USDA ARS source water. Similarly, the Low Line Canal is listed as a potential contaminant source because leakage from canals in the source water assessment area is known to recharge the aquifer (Cosgrove, et al., 1997). Consequently, if a spill occurs and contaminants are transported through the source water assessment area by the canal, contaminants could leach into the USDA ARS source water.

Table 1. USDA ARS Well, Potential Contaminant Inventory

Site #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
	Highway 30	0-3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	0-3	GIS Map	IOC, VOC, SOC, Microbes
1	USDA ARS, historical, closed UST	0-3	Database Search	VOC, SOC
2	Agricultural Chemicals, wholesale	0-3	Database Search	IOC, VOC, SOC
3	USDA ARS, agricultural research	0-3	Database Search	IOC, SOC
	Low Line Canal	6-10	GIS Map	IOC, VOC, SOC, Microbes

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

FIGURE 2. USDA ARS Delineation Map and Potential Contaminant Source Locations



LEGEND

Time of Travel Zones
- 1B (3 yr TOT)
- 2 (6 yr TOT)
- 3 (10 yr TOT)
- Wellhead
- Enhanced Inventory
- CERCLIS Site
- RCRIS Site
- Dairy
- LUST Site
- Closed UST Site
- Open UST Site
- Business Mailing List
- NPDES Site
- Mine
- AST
- Toxic Release Inventory
- SARA Title III Site (EPCRA)
- Recharge Point
- Injection Well
- Group1 Site
- Cyanide Site
- Landfill
- Wastewater Land App.Site

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

PWS# 5420061
WELL

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

Hydrologic sensitivity was high for the USDA ARS drinking water well (Table 2). This reflects the nature of the soils being in the moderately-drained to well-drained class, the vadose zone (zone from land surface to the water table) being made predominantly of fractured basalt, first ground water being located within 300 feet of ground surface, and a lack of at least 50 cumulative feet of low permeability units (aquitard) that could retard downward movement of contaminants. The absence of an aquitard coupled with the soil and vadose zone properties of the USDA ARS well allow for the downward migration of potential contaminants. The shallow depth to water decreases the potential for downward migrating contaminants to degrade (attenuate) through adsorption or other mechanisms.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. The USDA ARS drinking water system consists of one well that extracts ground water for domestic uses. The well system construction score was moderate for the USDA ARS well (Table 2). A Sanitary Survey for the system, conducted in 1999, determined that the USDA ARS well was in compliance with wellhead and surface seal standards. The USDA ARS well is protected from surface flooding and is located outside the 100-year floodplain.

The USDA ARS well log indicated that the highest water production zone for the USDA ARS well is over 100 feet below static water level, providing some protection to the source water from downward migrating contaminants. The casing was extended into a low permeability units, protecting the well from potential migrating contaminants near the surface. The well log did not contain casing thickness information for the USDA ARS well. Consequently, it was not possible to determine that the USDA ARS well meets current IDWR standards. Current standards require 0.365-inch thick casing for 10-inch diameter casing, as listed in the Recommended Standards for Water Works (1997).

The IDWR Well Construction Standards Rules (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the Recommended Standards for Water Works (1997) during construction. Under current standards, all PWS wells are required to have a 50 foot buffer around the wellhead. The 1999 Sanitary Survey instructed that no fertilizers, herbicides, or pesticides should be applied within 50 feet of the wellhead.

Potential Contaminant Sources and Land Use

The USDA ARS well water rated high for potential IOC (e.g., nitrates), VOC (e.g., petroleum products), and SOC (e.g., pesticides) contamination. Agricultural land use, the presence of a nitrate priority area and an organics priority area (pesticides), high countywide farm chemical use, and the presence of multiple potential contaminant sources within the delineated source water assessment area contributed to the rankings. The USDA ARS well water rated low for potential microbial contaminantion (Table 2). This rating is due to the fact that potential microbial contaminant sources in the delineated source water area are less numerous than for IOCs,

VOCs, and SOCs. Table 1 lists the potential contaminant sources in the delineated source water area for the USDA ARS well. The locations of potential contaminant sources for the USDA ARS well are shown on Figure 2.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL or a detection of a VOC or SOC at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and a large percentage of agricultural land contribute greatly to the overall ranking. The presence of a nitrate priority area and an organics priority area also contributes to the overall ranking. In terms of total susceptibility, the USDA ARS drinking water well rated moderate for potential IOC, VOC, SOC, and microbial contamination (Table 2). High countywide farm chemical use, the presence of a nitrate priority area and an organics priority area for pesticides, the high percentage of agricultural land in the vicinity, aquifer properties, and the presence of multiple potential sources of contamination in the delineated source water assessment area contributed to the overall ratings for the USDA ARS well.

Table 2. Summary of USDA ARS Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
USDA ARS Well	H	H	H	H	L	M	M	M	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

According to DWIMS, no VOCs, SOCs, or microbial contaminants were detected in the USDA ARS well water. Nitrates represent the main water chemistry recorded for the public water system. From September 1993 to June 2000, nitrate levels in the USDA ARS well water ranged from 4.96 mg/l to 6.05 mg/l for five samples. The MCL for nitrate is 10 mg/l. A single detection of arsenic, well below the current MCL was recorded in May 1995.

A nitrate priority area and an organics priority area (for pesticides) cross the delineated source water area of the USDA ARS well. Countywide farm chemical use is considered high, and the delineated source water area for the USDA ARS well is surrounded by a significant amount of irrigated agricultural land. Additionally, multiple potential sources of contamination exist in the delineated source water area for the USDA ARS well.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies.

For the USDA ARS drinking water system, source water protection activities should first focus on implementing the recommendations outlined in the 1999 Sanitary Survey. Since nitrate detections recorded in the USDA ARS well reached 60% of the MCL, USDA ARS should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat nitrates. Practices aimed at reducing or preventing the leaching of farm chemicals into the soil should be investigated and implemented.

USDA ARS should also be diligent about local businesses with potential IOC, VOC, SOC, or microbial contaminants. Any spills from the potential contaminant sources in the delineated capture zone should be monitored carefully. Any surface releases should be monitored to prevent contaminants from infiltrating to the ground water producing zones. The highly fractured nature of the basalt aquifer could lead to cross-contamination from shallower fractures to deeper fractures depending on well construction.

Most of the source water protection designated area is outside the direct jurisdiction of USDA ARS. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside of the direct jurisdiction of USDA ARS. Partnerships with state and local agencies and industry groups should be established and are critical to success. Continued vigilance in keeping the wells protected from surface flooding can also keep the potential for contamination reduced. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office (208) 736-2190

State DEQ Office (208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1–800–962–3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as "Superfund" is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Attachment A

USDA ARS

Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : USDA ARS Well# : WELL Public Water System Number 5420061 5/17/01 9:45:50 AM

1. System Construction		SCORE				
Drill Date		8/31/62				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	1999			
Well meets IDWR construction standards		NO	1			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		YES	0			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		1			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		6			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A		IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high		YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	4	4	5	2
(Score = # Sources X 2) 8 Points Maximum			8	8	8	4
Sources of Class II or III leacheable contaminants or		YES	8	4	5	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land		4	4	4	4
	Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	18	8
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		NO	0	0	0	
Sources of Class II or III leacheable contaminants or		NO	0	0	0	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land		2	2	2	
	Potential Contaminant Source / Land Use Score - Zone II		2	2	2	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		YES	1	1	1	
	Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score			27	23	27	10
4. Final Susceptibility Source Score			12	12	12	11
5. Final Well Ranking			Moderate	Moderate	Moderate	Moderate